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| EXAMINER | |
|---|---|
| ROST, ANDREW J | |

| ART UNIT | PAPER NUMBER |
|---|---|
| 3751 | |

DATE MAILED: 05/23/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 10/802,439 | MORRISON, WILLIAM | |
| | Examiner | Art Unit | |
| | Andrew J. Rost | 3751 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *08 December 2005 and 27 April 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *1-34* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-34* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

## DETAILED ACTION

1. This action is in response to the amendments filed on 12/08/2005 and 4/27/2006. In the amendment filed on 12/08/2006, no claims were cancelled, claims 1-6, 9, 16-18, 21, and 26-32 were amended and claims 33-34 were newly added. Presently, claims 1-34 are pending.

### *Response to Amendment*

2. Applicant's request for reconsideration of the finality of the 102 rejections to claims 9-28, and 33-34 of the last Office action is persuasive and, therefore, the finality of that action is withdrawn.

### *Claim Rejections - 35 USC § 102*

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 1-3, and 8 are rejected under 35 U.S.C. 102(b) as being anticipated by Hajny et al. (5,295,562).

Regarding claim 1, Hajny et al. disclose an actuator (10) for a valve with a gear assembly (power transmission 16), a motor (14), biasing mechanism (spring assembly 31, not shown) that returns the valve stem to a closed position in a rapid manner (in excess of 6000 RPMS (col. 4, lines 50-55)), and a brake mechanism (centrifugal brake 12) mounted on the drive shaft of the motor and will slow the attainable velocity of the actuator when the biasing member is in operation (Column 4, lines 50-60) and the brake will slow the return of the valve stem to a closed position.

In regards to claim 2, Hajny et al. disclose the biasing mechanism is a spring assembly (31, col. 4, lines 15-20).

In regards to claims 3 and 8, Hajny et al. disclose a brake means of a centrifugal brake that uses friction and only interacts with brake plate (37) at sufficient rotational speeds (Column 4-5, lines 67-2).

5. Claims 1, 2 and 4 are rejected under 35 U.S.C. 102(b) as being anticipated by Weiss et al. (6,097,123).

Regarding claim 1, Weiss et al. disclose an actuator (10) with a motor (22), biasing means (coiled spring 20) that returns the valve stem to a closed position in a rapid manner and a brake through a control apparatus (34) that will slow the return of the valve stem to a closed position.

In regards to claim 2, Weiss et al. disclose the biasing mechanism to be a coiled spring (20).

In regards to claim 4, Weiss et al. disclose the apparatus comprises a stationary ring of conductive material with a magnet and as the magnet moves eddy currents are produced in the stationary ring resulting in impedance to the movement of the transmission (Column 2, lines 19-27).

6. Claims 1-3 and 8 are rejected under 35 U.S.C. 102(b) as being anticipated by Persons (2,052,987).

Regarding claim 1, Persons discloses an actuator with a gear assembly (26), a motor (36) with the housing being defined by frame (18), a biasing mechanism (spring 39) that returns the valve stem to a closed position in a rapid manner, and a brake mechanism (friction brake in drum 41) mounted on the drive shaft of the motor and will retard the speed of the device (Column 2-3, lines 50-7).

In regards to claim 2, Persons discloses the biasing mechanism is a spring (39).

In regards to claim 3, Persons discloses brake means that uses the interaction between friction blocks (44) and drum (41) (Column 2-3, lines 50-7).

In regards to claim 8, Persons discloses a brake that interacts with a sidewall of the drum after a certain speed is reached.

7. Claims 1-3 and 8 are rejected under 35 U.S.C. 102(e) as being anticipated by Min (US 2005/0092950).

Regarding to claim 1, Min discloses a motor brake structure used for opening and closing a valve structure with the actuator assembly having a motor (10), a biasing

mechanism (resilient spring 36) for driving the valve stem in a direction opposite to the motor driving direction and a brake (50) that increases the time required for the closing of the valve by the biasing mechanism.

In regards to claim 2, Min discloses a biasing mechanism of a resilient spring (36).

In regards to claims 3 and 8, Min discloses the brake uses friction and contacts a sidewall of the motor housing when a predetermined rotational velocity is reached (paragraph 0060).

8. Claims 1 and 5 are rejected under 35 U.S.C. 102(b) as being anticipated by Bucher (6,688,438).

Regarding claim 1, Boucher discloses an actuator for an electric motor having a motor (2) that operates a valve stem, a biasing mechanism (resetting spring 3) that closes the valve stem in a rapid movement and a brake (centrifugal brake 6 in conjunction with a gearing 4 and transmission element 5) that slows the speed of the return of the valve element.

In regards to claim 5, Boucher discloses a gearing that has at least one reduction stage between the motor and the transmission element and between the motor and the spring (col. 2, lines 32-36) with the gearing supporting the motor so that the required forces can be obtained on the actuating member (8).

***Claim Rejections - 35 USC § 103***

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

10. Claims 9-17 and 33-34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hajny et al.

Regarding claim 9, Hajny et al. disclose an actuator assembly (10) for a valve with a gear assembly (power transmission 16), a motor (14), biasing mechanism (spring assembly 31, not shown) and a brake mechanism (centrifugal brake 12) mounted on the drive shaft of the motor and will slow the attainable velocity of the actuator when the biasing member is in operation (col. 4, lines 50-60) and the brake will slow the return of the valve stem to a closed position. Hajny et al. do not disclose limiting the rotational velocity of the output shaft of the motor to less than 1000 rpms. However, Hajny et al. disclose that the brake can be adjusted in many ways to alter the braking effect or to change the rotational velocity required to initiate braking (col. 6, line 7-24), this changing of the braking changes the threshold rotation and limits the rotation of the output shaft of the motor to any desired value. Therefore, it would have been obvious to a skilled artisan, upon seeing Hajny et al.'s device, would be able to adjust the rotational velocity of the output shaft to less than 1000 rpms, since choosing such a range is an obvious design consideration to limit the rotational velocity of the components of the actuator to promote a longer service life of the actuator components.

In regards to claims 10-13, the modified Hajny et al. reference discloses the use of a biasing mechanism to return a valve to either completely opened or completely closed position (col. 1, lines 54-56) with the biasing mechanism working in the opposite direction of the motor driving direction.

In regards to claim 14, the modified Hajny et al. reference discloses the biasing mechanism is a spring assembly (31, col. 4, lines 15-20).

In regards to claim 15, the modified Hajny et al. reference discloses a motor having a motor housing (sidewall and top, brake plate 37 in Figure 1).

In regards to claim 16, the modified Hajny et al. reference discloses a centrifugal brake has flex members (48) that as the rotational speed is increased to a sufficient speed will cause flex members to bend toward the friction surface of the motor housing (Figure 4) causing the centrifugal brake to frictionally engage the motor housing (Column 5, lines 54-67).

In regards to claim 17, the modified Hajny et al. reference discloses the centrifugal brake mounted on the drive shaft of the motor and radially secured and centered on the shaft (Figure 2).

In regards to claim 33, Hajny et al. disclose an actuator with a motor, biasing mechanism and a brake. Hajny et al. do not expressly disclose that the brake increases the time period required for the biasing mechanism to close the valve stem to 4 seconds or more. However, Hajny et al. do disclose the brake can be adjusted to alter the braking effect (col. 6, lines 7-8), this altering of the braking effect changes the closing time of the valve so time required to close can be increased with alterations to the

brake. Therefore, it would have been obvious to a skilled artisan, upon seeing Hajny et al.'s device, to adjust the brake so that to close the valve to 4 seconds or more since it is a matter of design consideration to lengthen the time required to close the valve in order to promote a longer service life of the valve components.

In regards to claim 34, the modified Hajny et al. reference discloses an actuator with a motor, biasing mechanism and a brake. Hajny et al. do not disclose having the brake being adapted to limit a rotational velocity of the motor only after the rotational velocity of the motor exceeds a threshold speed with the threshold speed being 900 rpm or less. However, Hajny et al. disclose that the brake can be adjusted in many ways to alter the braking effect or to change the rotational velocity required to initiate braking (col. 6, line 7-24). Therefore, it would have been an obvious matter of design consideration to limit the rotational velocity required to initiate the braking of the biasing mechanism in order to promote a longer service life of the actuator.

11. Claims 9-25, 27-30 and 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Min.

Regarding claim 9, Min discloses a motor brake structure used for opening and closing a valve structure in a pipe (31) with the actuator assembly having a motor (10), a biasing mechanism (resilient spring 36) for driving the valve stem in a direction opposite to the motor driving direction and a brake (50) that increases the time required for the closing of the valve by the biasing mechanism. Min does not disclose limiting the rotational velocity of the output shaft of the motor to less than 1000 rpms. However, Min

discloses rotational velocity of the motor shaft is limited by the brake and the brake can be altered to adjust the rotation speed of the motor (paragraph 0063). Therefore, it would have been obvious to a skilled artisan, upon seeing Min's reference, to adjust the rotational velocity of the output shaft to less than 1000 rpms since choosing such a range is an obvious design consideration to limit the rotational velocity of the components of the actuator to promote a longer service life of the actuator components.

In regards to claims 10-13, the modified Min reference discloses that the motor can be run in either a forward or reverse direction with the biasing mechanism working in the opposite direction to the motor driving direction depending on the orientation of the valve in the pipe (paragraph 0064).

In regards to claim 14, the modified Min reference discloses the biasing structure is a resilient spring (36).

In regards to claim 15, the modified Min reference discloses the motor has a motor housing (12).

In regards to claim 16, the modified Min reference discloses the brake is of a flexible material and moves outwardly to engage a portion of the motor housing (paragraph 0050).

In regards to claim 17, the modified Min reference discloses the output shaft of the motor (56) is radially centered and flexible material of the brake is secured to the shaft (Figure 2).

In regards to claims 18-20, the modified Min reference discloses the brake has a structure of a straight piece (512) with curved portions (513) extending from the ends of

the straight piece with thickened portions (514) at the end of the curved portions with the thickened portions contacting the housing under a predetermined force (Figures 6, 7).

Regarding claim 21, Min discloses an actuator for a valve that is movable between an open and closed position in a pipe with the actuator having a damping mechanism (brake 50) that limits the return speed and time of the biasing mechanism but does not limit the operation of the motor. Min does not expressly disclose that the brake increases the time period required for the biasing mechanism to close the valve stem to 4 seconds or more. However, Min discloses that the rotational velocity of the motor shaft is limited by the brake and the brake can be altered to adjust the rotation speed of the motor (paragraph 0063) with the altering of the brake increasing the return time. Therefore, it have been obvious to a skilled artisan, upon seeing Min's reference, to adjust the brake to close the valve in 4 seconds or more since choosing such a range is an obvious design consideration to adjust the brake to limit the rotation speed of the motor and increase the time of closing in order to promote a longer service life of the actuator components.

In regards to claims 22-25, the modified Min reference discloses the actuator for a valve in a pipe controlling the flow of a fluid and can be configured to handle water systems.

Regarding claims 27, and 28, Min discloses a motor brake structure used for opening and closing a valve structure with the actuator assembly having a motor (10), a biasing mechanism (resilient spring 36) for driving the valve stem in a direction opposite

to the motor driving direction and a brake (50) that increases the time required for the closing of the valve by the biasing mechanism. Min does not disclose limiting the rotational velocity of the output shaft of the motor to less than 1000 rpms or 800 rpms. However, Min discloses rotational velocity of the motor shaft is limited by the brake and the brake can be altered to adjust the rotation speed of the motor (paragraph 0063). Therefore, it have been obvious to a skilled artisan, upon seeing Min's reference, to adjust the rotational velocity of the output shaft to less than 1000 rpms or 800 rpms since choosing such a range is an obvious design consideration to limit the rotational velocity of the components of the actuator to promote a longer service life of the actuator components.

Regarding claim 29, Min discloses a method of operating a valve by having a motor to operate a valve in pipe with a first force, returning the valve to its original position by using a biasing mechanism (resilient spring 36) and reducing the speed of return by operating a brake that interacts with a wall of the motor housing. Min does not expressly disclose that the brake increases the time period required for the biasing mechanism to close the valve stem to 4 seconds or more. However, Min discloses that the rotational velocity of the motor shaft is limited by the brake and the brake can be altered to adjust the rotation speed of the motor (paragraph 0063) with the altering of the brake increasing the return time. Therefore, it have been obvious to a skilled artisan, upon seeing Min's reference, to adjust the brake to close the valve in 4 seconds or more since choosing such a range is an obvious design consideration to adjust the

brake to limit the rotation speed of the motor and increase the time of closing in order to promote a longer service life of the actuator components.

In regards to claim 30, the modified Min reference discloses the operation of the valve to fully open and fully closed positions (paragraph 0064).

In regards to claim 33, Min discloses an actuator with a motor, biasing mechanism and a brake. Min does not expressly disclose that the brake increases the time period required for the biasing mechanism to close the valve stem to 4 seconds or more. However, Min does disclose the rotational velocity of the motor shaft is limited by the brake and the brake can be altered to adjust the rotation speed of the motor (paragraph 0063) with the altering of the brake increasing the return time. Therefore, it have been obvious to a skilled artisan, upon seeing Min's reference, to adjust the brake to close the valve in 4 seconds or more since choosing such a range is an obvious design consideration to adjust the brake to limit the rotation speed of the motor and increase the time of closing in order to promote a longer service life of the actuator components.

12. Claims 6 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hajny et al. in view of Pasch et al. (6,021,955).

Hajny et al. disclose an actuator (10) for a valve with a gear assembly (power transmission 16), a motor (14), biasing mechanism (spring assembly 31, not shown) that returns the valve stem to a closed position in a rapid manner (in excess of 6000 RPMS (col. 4, lines 50-55)) and drives the valve stem in a direction opposite the motor

driving direction, and a brake mechanism (centrifugal brake 12) mounted on the drive shaft of the motor and will slow the attainable velocity of the actuator when the biasing member is in operation (Column 4, lines 50-60) and the brake will slow the return of the valve stem to a closed position . Hajny et al. does not disclose using a controller to apply an electrical signal to the motor in order to slow the return speed with a series of electrical pulses. However, Pasch et al. disclose periodically energizing and pulsing the motor for regulating the speed of the damper as the damper moves from a closed position to an open position (Column 10, line 62-67) in order to reduce noise, spare damages and prevent overtravel of the motor (col. 10, lines 29-31). Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to pulse the motor of Hajny et al. as taught by Pasch et al. in order to reduce noise, spare damages and prevent overtravel of the motor.

13. Claim 26 is rejected under 35 U.S.C. 103(a) as being unpatentable over Min as applied to claim 21 above, and further in view of Pasch et al.

Min discloses an actuator for a valve that is movable between an open and closed position in a pipe with the actuator having a damping mechanism (brake 50) that limits the return speed and time of the biasing mechanism but does not limit the operation of the motor. Min does not disclose the use of a thermostat to send control signals to the actuator. However, Pasch et al. disclose that motors in heating and cooling systems respond to a control arrangement which sends a signal corresponding to a thermostat (col. 1, lines 49-52). Therefore, it would have been obvious to one of

ordinary skill in the art at the time of invention to control the actuator of Min with a thermostat as taught by Pasch et al. in order to control a fluid flow in a temperature regulated system.

14. Claims 31 and 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schreiner, Jr. et al. (6,073,907) in view of Min.

Schreiner, Jr. et al. disclose a method for replacing a valve actuator system by removing either the entire actuator or removing a casing to obtain access to the motor. Schreiner, Jr. et al. do not disclose using a motor having a brake to replace the motor in the housing. However, Min teaches a motor for a valve actuator having a brake disposed in the motor housing that contacts the motor housing when the valve is closing in order to prevent the valve components from being damaged (paragraph 0014). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use the motor with brake as taught by Min in the removable and interchangeable valve actuator system of Schreiner, Jr. et al. in order to prevent the valve components from being damaged.

***Response to Arguments***

15. Applicant's arguments, see page 12, 14 second full paragraph, 15, and 18 last paragraph filed 4/27/2006, with respect to the 102 rejections for claims 9-28, and 33-34 have been fully considered and are persuasive. The 102 rejections of 2/27/2006 to claims 9-28, and 33-34 have been withdrawn. In response to applicant's arguments that

the cited prior art does not disclose a biasing mechanism that is adapted to close the valve stem "within a time period that would cause water hammer in the fluid system" or a brake for increasing the time period that the biasing mechanism closes the valve stem "by an amount that eliminates water hammer in the fluid system", a recitation of the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim. Hajny et al. have the same structure as claimed. Although it is true that Hajny et al. do not particularly state the actuator performs the claimed function, however, since claim 1 is an apparatus claim and it is clear that Hajny et al.'s actuator would be able to perform the same function because Hajny et al.'s actuator has the same structure, therefore, the rejection stands.

16. Applicant's argument on page 11, first full paragraph, is not persuasive. Applicant argues the Hajny et al. appear to disclose "an air damper for use in an air duct of an HVAC system" and not for a waver valve. Examiner disagrees because in col. 1, lines 27-29 and 31-33 Hajny et al. clearly disclose a fluid valve. Note the fluid valve can be a water valve. Therefore, Hajny et al.'s actuator would be able to control a water valve.

## *Conclusion*

17. Applicant's amendments necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP

§ 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Andrew J. Rost whose telephone number is 571-272-2711. The examiner can normally be reached on 7:30-5 M-Th and 7:30-5 every other Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Justine Yu can be reached on 571-272-4835. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Andrew J Rost
Examiner
Art Unit 3751

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5/18/06